

# Assembly and operating manual

## ELM

### Linear axis



## Imprint

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### Technical changes:

We reserve the right to make alterations for the purpose of technical improvement.

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thank you for trusting our products and our family-owned company, the leading technology supplier of robots and production machines.

Our team is always available to answer any questions on this product and other solutions. Ask us questions and challenge us. We will find a solution!

Best regards,

Your SCHUNK team

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## 1 General

### 1.1 About this manual

This manual contains important information for a safe and appropriate use of the product.

This manual is an integral part of the product and must be kept accessible for the personnel at all times.

Before starting work, the personnel must have read and understood this operating manual. Prerequisite for safe working is the observance of all safety instructions in this manual.

Illustrations in this manual are provided for basic understanding and may differ from the actual product design.

In addition to these instructions, the documents listed under [Applicable documents](#) [► 6] are applicable.

#### 1.1.1 Presentation of Warning Labels

To make risks clear, the following signal words and symbols are used for safety notes.



#### **⚠ DANGER**

##### **Danger for persons!**

Non-observance will inevitably cause irreversible injury or death.



#### **⚠ WARNING**

##### **Dangers for persons!**

Non-observance can lead to irreversible injury and even death.



#### **⚠ CAUTION**

##### **Dangers for persons!**

Non-observance can cause minor injuries.

#### **NOTICE**

##### **Material damage!**

Information about avoiding material damage.

### 1.1.2 Applicable documents

- General terms of business\*
- Catalog data sheet of the purchased product \*
- Assembly and operating manuals of the accessories \*

The documents marked with an asterisk (\*) can be downloaded on our homepage **schunk.com**

### 1.2 Warranty

If the product is used as intended, the warranty is valid for 24 months from the ex-works delivery date under the following conditions:

- Observe the specified maintenance and lubrication intervals
- Observe the ambient conditions and operating conditions

Parts touching the workpiece and wear parts are not included in the warranty.

### 1.3 Scope of delivery

The scope of delivery includes

- Linear axis ELM in the version ordered
- Assembly and Operating Manual
- Accessory pack

### 1.4 Accessories

The following accessories are required for the module:

- Cable set [Cable set](#) [▶ 6]
- Drive controller [Drive controller](#) [▶ 7]
- Power supply unit [Power supply unit](#) [▶ 7]

Order accessories separately.

For further accessories

- Position measuring systems [Position measuring systems](#) [▶ 7]
- Weight compensation [Weight compensation](#) [▶ 7]
- Hydraulic shock absorbers [Hydraulic shock absorbers](#) [▶ 7]
- Anti-fall device [Anti-fall device](#) [▶ 8]
- Fan cooling [Fan cooling](#) [▶ 8]
- Cover [Cover](#) [▶ 8]

#### 1.4.1 Cable set

Cables must be designed for the module and the drive controller used.

For design, exact type designations and order numbers, consult your SCHUNK contact person

### 1.4.2 Drive controller

The drive controller must be designed for the module and the application

For design, exact type designations and order numbers, consult your SCHUNK contact person

### 1.4.3 Power supply unit

The power supply unit must be designed for the module and the application.

For design, exact type designations and order numbers, consult your SCHUNK contact person

### 1.4.4 Position measuring systems

To increase positioning accuracy

Designation	Type / ID
Position measuring system for ELM 23-70	WSM 23-070 / 0314112
Position measuring system for ELM 37-160	WSM 37-160 / 0314113
Position measuring system for ELM 37-260	WSM 37-260 / 0314114

### 1.4.5 Weight compensation

For compensation of the slide weight and additional load in case of vertical use.

Designation	Type / ID
Weight compensation for ELM 23-70	GA 23-70 / 0314235
Weight compensation for ELM 37-160	GA 37-160 / 0314236
Weight compensation for ELM 37-260	GA 37-260 / 0314237

### 1.4.6 Hydraulic shock absorbers

To prevent damage in case of malfunctions.

Designation	Type / ID
Hydraulic shock absorbers for ELM 23	SD 23 / 0314262
Hydraulic shock absorbers for ELM 37	SD 37 / 0314263

### 1.4.7 Anti-fall device

#### NOTICE

##### Damage to the rod lock due to incorrect actuation / overload!

- The rod lock may only be triggered and unlocked when the product has been shut down.
- See the data on static holding force in the catalog. The forces occurring in a clamped condition must not exceed the holding force.
- In the event of a dynamic load or overload (e.g. drop in pressure during movement), the clamping cartridge must be checked and replaced if necessary.



#### ⚠ WARNING

**The rod lock is not a safety component for personal protection in the sense of the Machine Directive.**

The module is optionally available with a rod lock to prevent mechanical damage in the event of malfunctions.

Description	Type / ID
Rod lock for ELM 23-70	ASP-E 23-070 / 0314350
Rod lock for ELM 37-160	ASP-E 37-160 / 0314351
Rod lock for ELM 37-260	ASP-E 37 -260 / 0314352

### 1.4.8 Fan cooling

To increase the constant force in case of higher power consumption.

Alternatively, cooling by means of compressed air is possible, via the connection provided. [Air connections](#) [► 20]

Designation	Typ / ID
Fan cooling for ELM 23	MK 23 / 0314241
Fan cooling for ELM 37	MK 37 / 0314242

### 1.4.9 Cover

For routing of electric wires and pneumatic hoses

Designation	Typ / ID
Cover for ELM 23-70	MA 23-70 / 0314238
Cover for ELM 37-160	MA 37-160 / 0314239
Cover for ELM 37-260	MA 37-260 / 0314240

## 2 Basic safety notes

### 2.1 Intended use

The product is exclusively designed for linear movement of useful loads into any desired position.

- The product may only be used within the scope of its technical data, [Technical data](#) [▶ 16].
- When implementing and operating components in safety-related parts of the control systems, the basic safety principles in accordance with DIN EN ISO 13849-2 apply. The proven safety principles in accordance with DIN EN ISO 13849-2 also apply to categories 1, 2, 3 and 4.
- The product is intended for installation in a machine/system. The applicable guidelines must be observed and complied with.
- The product is intended for industrial and industry-oriented use.
- Appropriate use of the product includes compliance with all instructions in this manual.

### 2.2 Not intended use

It is not intended use if the product is used, for example, as a pressing tool, stamping tool, lifting gear, guide for tools, cutting tool, clamping device or a drilling tool.

- Any utilization that exceeds or differs from the appropriate use is regarded as misuse.

### 2.3 Constructional changes

#### Implementation of structural changes

By conversions, changes, and reworking, e.g. additional threads, holes, or safety devices can impair the functioning or safety of the product or damage it.

- Structural changes should only be made with the written approval of SCHUNK.

### 2.4 Spare parts

#### Use of unauthorized spare parts

Using unauthorized spare parts can endanger personnel and damage the product or cause it to malfunction.

- Use only original spare parts or spares authorized by SCHUNK.

### 2.5 Ambient conditions and operating conditions

#### Required ambient conditions and operating conditions

Incorrect ambient and operating conditions can make the product unsafe, leading to the risk of serious injuries, considerable material damage and/or a significant reduction to the product's life span.

- Make sure that the product is used only in the context of its defined application parameters, [Technical data](#) [▶ 16].

## 2.6 Personnel qualification

### Inadequate qualifications of the personnel

If the personnel working with the product is not sufficiently qualified, the result may be serious injuries and significant property damage.

- All work may only be performed by qualified personnel.
- Before working with the product, the personnel must have read and understood the complete assembly and operating manual.
- Observe the national safety regulations and rules and general safety instructions.

The following personal qualifications are necessary for the various activities related to the product:

<b>Trained electrician</b>	Due to their technical training, knowledge and experience, trained electricians are able to work on electrical systems, recognize and avoid possible dangers and know the relevant standards and regulations.
<b>Qualified personnel</b>	Due to its technical training, knowledge and experience, qualified personnel is able to perform the delegated tasks, recognize and avoid possible dangers and knows the relevant standards and regulations.
<b>Instructed person</b>	Instructed persons were instructed by the operator about the delegated tasks and possible dangers due to improper behaviour.
<b>Service personnel of the manufacturer</b>	Due to its technical training, knowledge and experience, service personnel of the manufacturer is able to perform the delegated tasks and to recognize and avoid possible dangers.

## 2.7 Personal protective equipment

### Use of personal protective equipment

Personal protective equipment serves to protect staff against danger which may interfere with their health or safety at work.

- When working on and with the product, observe the occupational health and safety regulations and wear the required personal protective equipment.
- Observe the valid safety and accident prevention regulations.
- Wear protective gloves to guard against sharp edges and corners or rough surfaces.
- Wear heat-resistant protective gloves when handling hot surfaces.
- Wear protective gloves and safety goggles when handling hazardous substances.
- Wear close-fitting protective clothing and also wear long hair in a hairnet when dealing with moving components.

## 2.8 Notes on safe operation

### Incorrect handling of the personnel

Incorrect handling and assembly may impair the product's safety and cause serious injuries and considerable material damage.

- Avoid any manner of working that may interfere with the function and operational safety of the product.
- Use the product as intended.
- Observe the safety notes and assembly instructions.
- Do not expose the product to any corrosive media. This does not apply to products that are designed for special environments.
- Eliminate any malfunction immediately.
- Observe the care and maintenance instructions.
- Observe the current safety, accident prevention and environmental protection regulations regarding the product's application field.

## 2.9 Transport

### Handling during transport

Incorrect handling during transport may impair the product's safety and cause serious injuries and considerable material damage.

- When handling heavy weights, use lifting equipment to lift the product and transport it by appropriate means.
- Secure the product against falling during transportation and handling.
- Stand clear of suspended loads.

## 2.10 Malfunctions

### Behavior in case of malfunctions

- Immediately remove the product from operation and report the malfunction to the responsible departments/persons.
- Order appropriately trained personnel to rectify the malfunction.
- Do not recommission the product until the malfunction has been rectified.
- Test the product after a malfunction to establish whether it still functions properly and no increased risks have arisen.

## 2.11 Disposal

### Handling of disposal

The incorrect handling of disposal may impair the product's safety and cause serious injuries as well as considerable material and environmental harm.

- Follow local regulations on dispatching product components for recycling or proper disposal.

## 2.12 Fundamental dangers

### General

- Observe safety distances.
- Never deactivate safety devices.
- Before commissioning the product, take appropriate protective measures to secure the danger zone.
- Disconnect power sources before installation, modification, maintenance, or calibration. Ensure that no residual energy remains in the system.
- If the energy supply is connected, do not move any parts by hand.
- Do not reach into the open mechanism or movement area of the product during operation.

### 2.12.1 Protection during handling and assembly

#### Incorrect handling and assembly

Incorrect handling and assembly may impair the product's safety and cause serious injuries and considerable material damage.

- Have all work carried out by appropriately qualified personnel.
- For all work, secure the product against accidental operation.
- Observe the relevant accident prevention rules.
- Use suitable assembly and transport equipment and take precautions to prevent jamming and crushing.

#### Incorrect lifting of loads

Falling loads may cause serious injuries and even death.

- Stand clear of suspended loads and do not step into their swiveling range.
- Never move loads without supervision.
- Do not leave suspended loads unattended.

## 2.12.2 Protection during commissioning and operation

### Falling or violently ejected components

Falling and violently ejected components can cause serious injuries and even death.

- Take appropriate protective measures to secure the danger zone.
- Never step into the danger zone during operation.

## 2.12.3 Protection against dangerous movements

### Unexpected movements

Residual energy in the system may cause serious injuries while working with the product.

- Switch off the energy supply, ensure that no residual energy remains and secure against inadvertent reactivation.
- The faulty actuation of connected drives may cause dangerous movements.
- Operating mistakes, faulty parameterization during commissioning or software errors may trigger dangerous movements.
- Never rely solely on the response of the monitoring function to avert danger. Until the installed monitors become effective, it must be assumed that the drive movement is faulty, with its action being dependent on the control unit and the current operating condition of the drive. Perform maintenance work, modifications, and attachments outside the danger zone defined by the movement range.
- To avoid accidents and/or material damage, human access to the movement range of the machine must be restricted. Limit/prevent accidental access for people in this area due through technical safety measures. The protective cover and protective fence must be rigid enough to withstand the maximum possible movement energy. EMERGENCY STOP switches must be easily and quickly accessible. Before starting up the machine or automated system, check that the EMERGENCY STOP system is working. Prevent operation of the machine if this protective equipment does not function correctly.

## 2.13 Notes on particular risks



### **⚠ DANGER**

**Danger to life due to strong magnetic fields even in a shut-down state.**

The integrated high performance permanent magnets can represent a risk to persons with an active or passive implant. The following persons are not allowed to remain in the vicinity of the magnetic field:

- Persons with pacemakers
- Persons with metal or electronic prostheses
- Persons with insulin pumps
- Persons with muscular stimulation systems.
- Persons with deaf-aids
- Pregnant women.
- The above mentioned persons must always keep a safe distance of at least 2 m from the product.



### **⚠ DANGER**

**Danger from electric voltage!**

Touching live parts may result in death.

- Switch off the power supply before any assembly, adjustment or maintenance work and secure against being switched on again.
- Only qualified electricians may perform electrical installations.
- Check if de-energized, ground it and hot-wire.
- Cover live parts.



### **⚠ DANGER**

**Risk of fatal injury from suspended loads!**

Falling loads can cause serious injuries and even death.

- Stand clear of suspended loads and do not step within their swiveling range.
- Never move loads without supervision.
- Do not leave suspended loads unattended.
- Wear suitable protective equipment.



### **⚠ WARNING**

#### **Risk of injury from objects falling and being ejected!**

Falling and ejected objects during operation can lead to serious injury or death.

- Take appropriate protective measures to secure the danger zone.



### **⚠ WARNING**

#### **Risk of injury due to unexpected movements!**

If the power supply is switched on or residual energy remains in the system, components can move unexpectedly and cause serious injuries.

- Before starting any work on the product: Switch off the power supply and secure against restarting.
- Make sure, that no residual energy remains in the system.



### **⚠ WARNING**

#### **Risk of injury from sharp edges and corners!**

Sharp edges and corners can cause cuts.

- Use suitable protective equipment.



### **⚠ WARNING**

#### **Risk of burns through contact with hot surfaces!**

The product can heat up considerably during operation. Touching hot surfaces can cause burns.

- Do not touch hot surfaces.
- Let them cool down before working on the product.
- Wear appropriate safety equipment.



### **⚠ WARNING**

#### **Risk of injury from objects falling during energy supply failure!**

Electronic devices are not fail-safe. In case of an energy supply failure, the gripping force decreases. As a consequence, it cannot be guaranteed that the workpiece is held safely.

- In case of an energy supply failure, it is the user's responsibility to revert the drive into a safe state.

### 3 Technical data

More technical data is included in the catalog data sheet.  
Whichever is the latest version.

#### 3.1 Basic version

	ELM 23- H70	ELM 37- H160	ELM 37- H260
Mechanical operating data			
Weight [kg]	1,5	4,95	5,5
Max. payload (horizontal installation) [kg]	3	8	6
Max. stator temperature [°C]	65	65	65
Max. driving force [N]	60	160	160
Max. rated/constant force (with us of fan cooling) [N]	31	100	100
Repeat accuracy (more exact positioning through accessory position measuring system) [mm]	±0.05	±0.05	±0.05
Max. speed [m/s]	1,5	1,4	1,4
Max. acceleration [m/s <sup>2</sup> ]	43	35	35
Max. useful stroke [mm]	70	160	260
IP rating	40	40	40
Electrical operating data			
Nominal voltage [VDC]	72	72	72
Max. current [A]	2,8	5	5
Operating data for compressed air connection			
Pressure medium	Compressed air, compressed air quality according to ISO 8573-1:7 4 4		

### 3.2 Option with anti-fall device (deviating data)

	ELM 23-H70-ASP	ELM 37-H160-ASP	ELM 37-H260-ASP
Weight [kg]	1,61	5,25	5,83
Minimum release pressure [bar]	3	3	3
Static holding force [N]	180	350	350
Max. axial play of clamp [mm]	0,2	0,25	0,25

### 3.3 Fan cooling

	MK 23	MK 37
Nominal voltage [VDC]	24	24

### 3.4 Weight compensation

	GA 23-70	GA 37-160	GA 37-260
Feeding force [N/bar]	2,6	6,7	6,7
Module slide weight [kg]	0,7	2,6	3,15

## 4 Assembly

### 4.1 Connections

#### 4.1.1 Mechanical connection



#### **⚠ WARNING**

**Danger of injury due to unexpected movements of the machine/system!**

- Switch off energy supply.

#### Evenness of the mounting surface

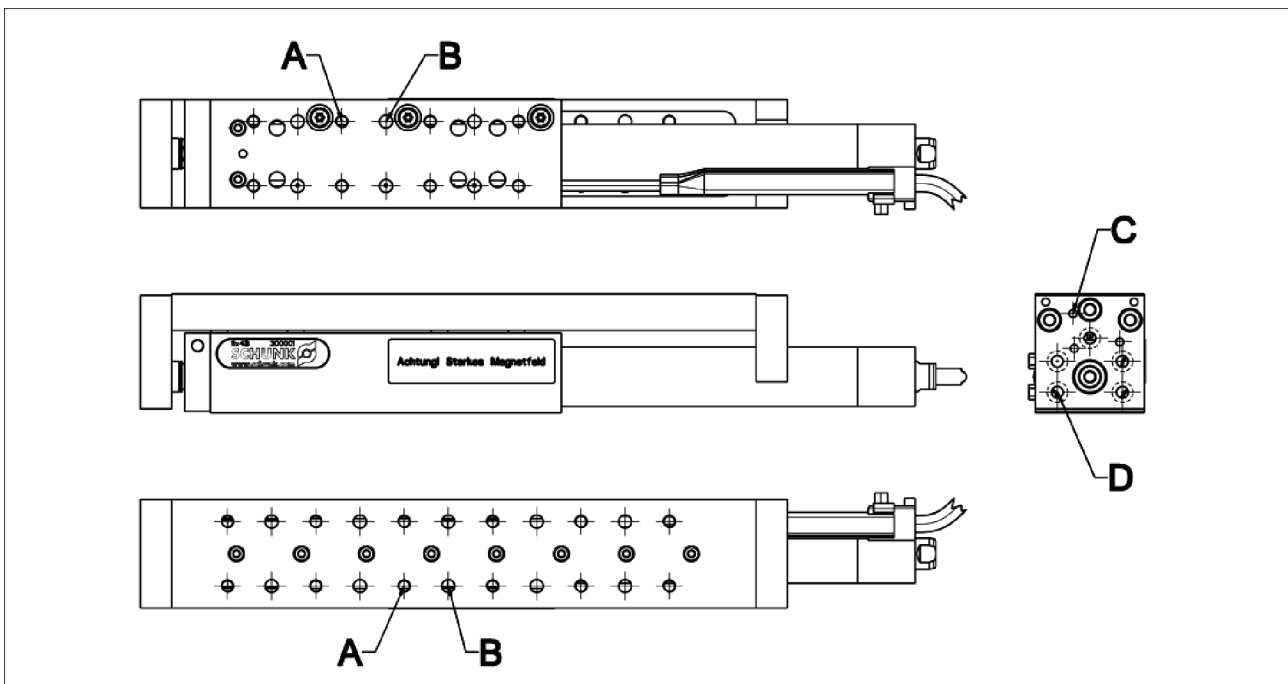
The values apply to the whole mounting surface to which the product is mounted.

*Requirements for evenness of the mounting surface (Dimensions in mm)*

Edge length	Permissible unevenness
< 100	< 0.02
> 100	< 0.05

#### Mounting

Connection geometries are on the base body, on the slide and on the end plate:



Connection geometries for ELM 23

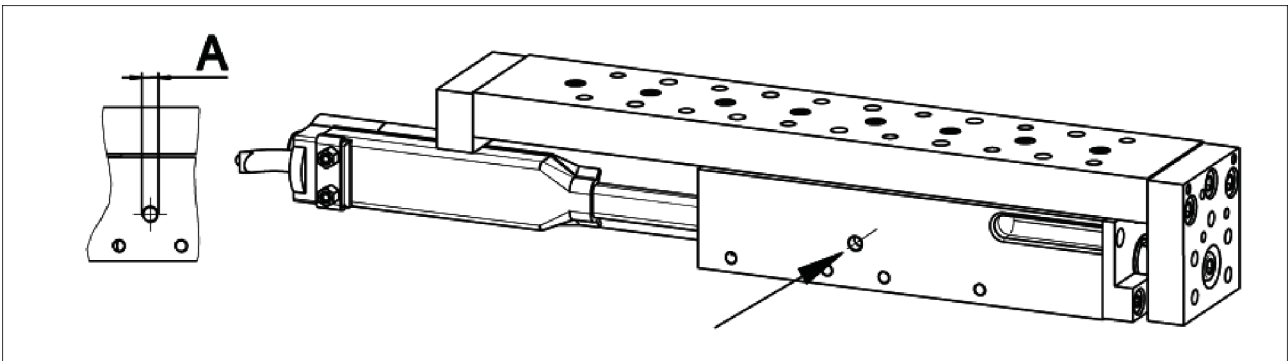


Connection geometries for ELM 37

	ELM 23	ELM 37
A	M5 / 7	M5 / 10
B [mm]	Ø5F7 / 7	Ø5F7 / 3
C [mm]	Ø3F7	Ø5F7
D	Km4 DIN974-1	Km5 DIN974-1
E [mm]	-	Ø5F7 / 5
F	-	M5 / 9
G [mm]	-	12.05 / 1.2

### 4.1.2 Air connections

The module has a compressed air connection for cooling of the drive.



Luftanschlüsse

	ELM 23	ELM 37
A	M5	M5

### 4.1.3 Electrical connection



#### **⚠ WARNING**

#### **Danger from electric voltage!**

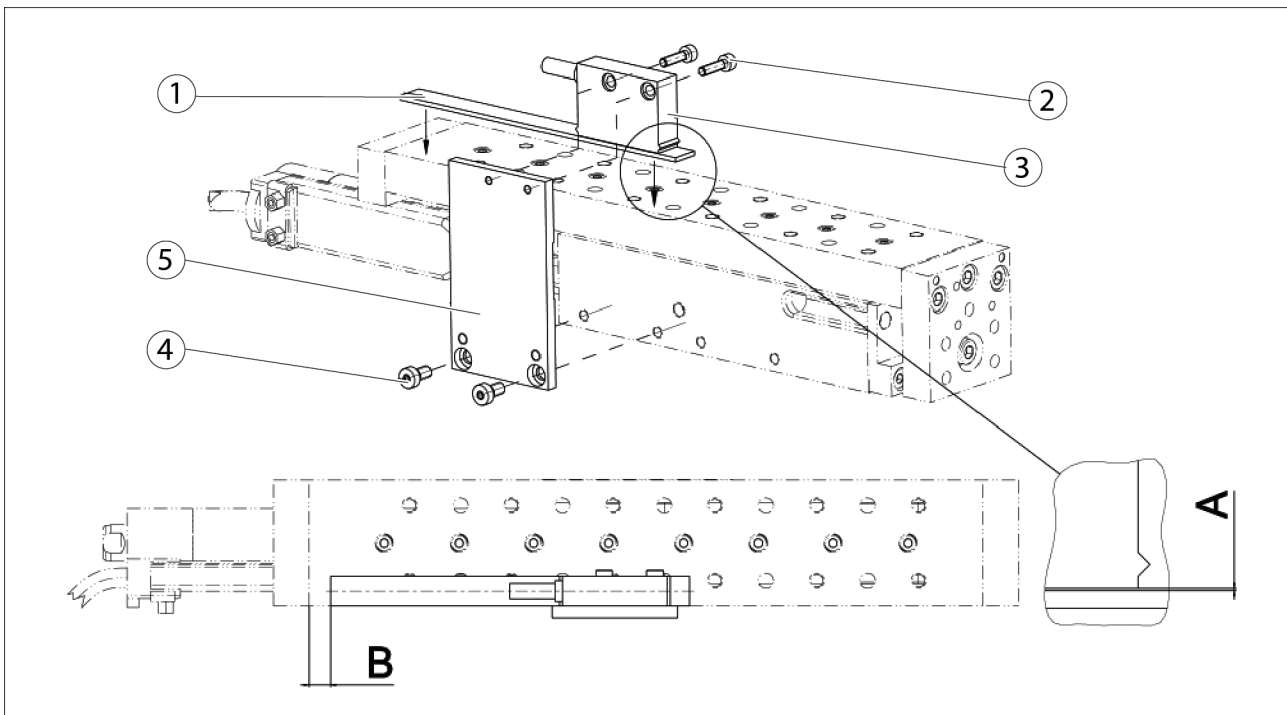
Touching live parts can result in death.

- Switch off the power supply before any assembly, adjustment or maintenance work and secure against being switched back on again.
- Only qualified electricians should perform electrical installations.
- Cover up live parts.
- Check if de-energized, ground it and hot wire.

Use the specified cable sets and controllers. Consult your SCHUNK contact person if necessary

## 4.2 Assembly of position measuring system WSM

The position measuring system is delivered in disassembled state and must be assembled as described in the following figure:



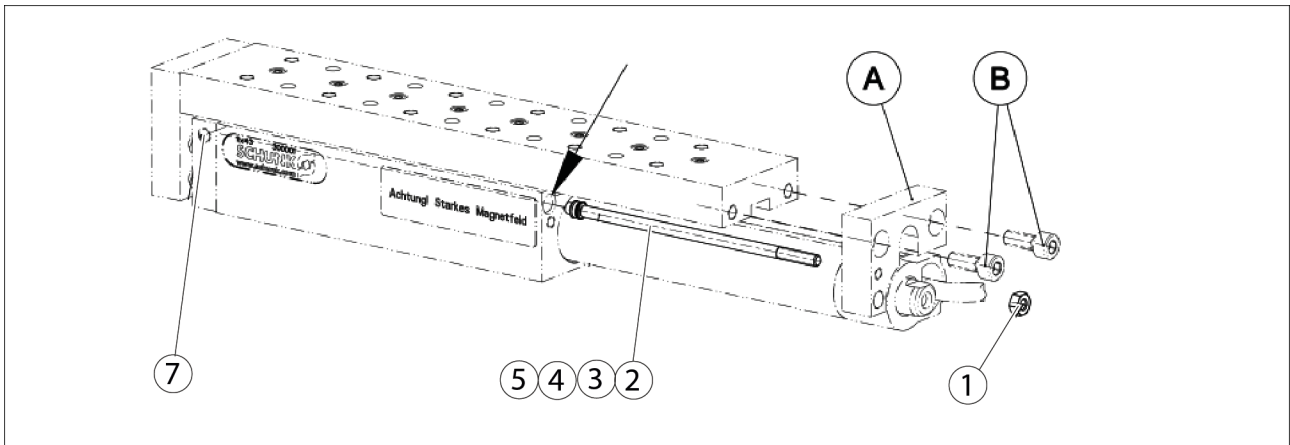
Mounting of position measuring system

	Designation	WSM 23-H70	WSM 37-H...
A	Clearance of reading head from magnetic tape [mm]	$0.3 \pm 0.1$	$0.3 \pm 0.1$
B	Position of magnetic tape [mm]	7	27,5

- The bolting surfaces must be clean and undamaged and the support surface for the magnetic tape must be free of dirt and grease.
- Bolt the sensor bracket (5) to the base body using cylindrical screws (4).
- Bond the magnetic tape (1) flush with the outer edge of the module to the base body (self-adhesive) as in the Figure.
- Bolt the magnetic sensor (3) to the sensor bracket (5) using cylindrical screws (2) and set the clearance from the reading head to the magnetic tape (A).

### 4.3 Mounting of weight compensation GA

#### 4.3.1 Weight compensation GA 23

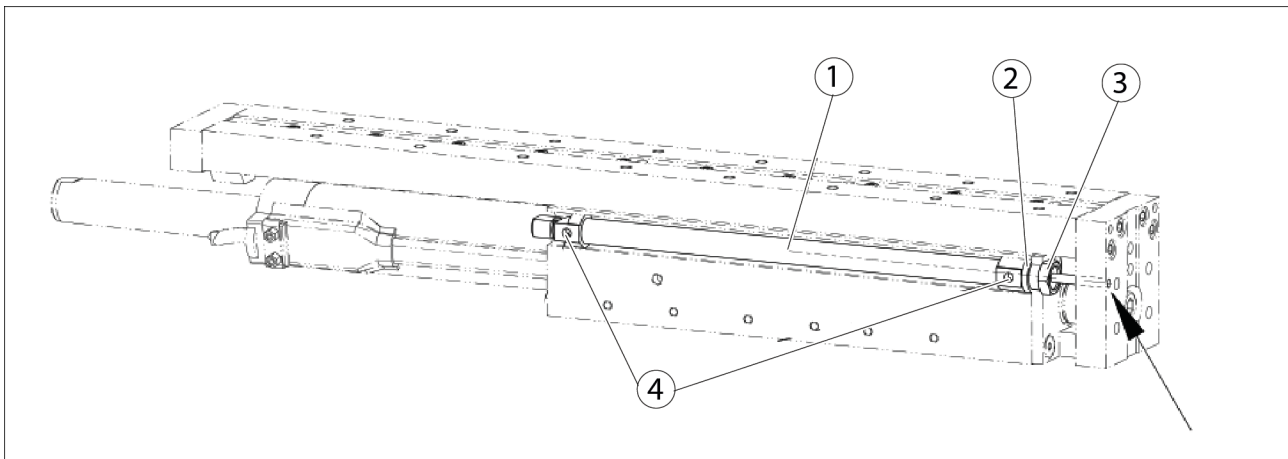


Weight compensation GA 23

	Designation	GA 23
7	Air connection	M5

- Remove the end plate (A) and the mounting screws (B).
- Clean the receiving bore for the weight compensation (arrow) and grease [Lubricants / lubrication points \(basic lubrication\)](#) [► 32].
- Grease piston and insert pre-assembled piston rod (02...05) into the receiving bore.
- Re-install the end plate (A) and the mounting screws (B).
- Secure screws with suitable chemical thread locking agent!
- Screw piston rod into the threads provided in the end plate.
- Secure piston rod with nut (07).
- Secure nut with suitable chemical thread locking agent!

### 4.3.2 Weight compensation GA 37

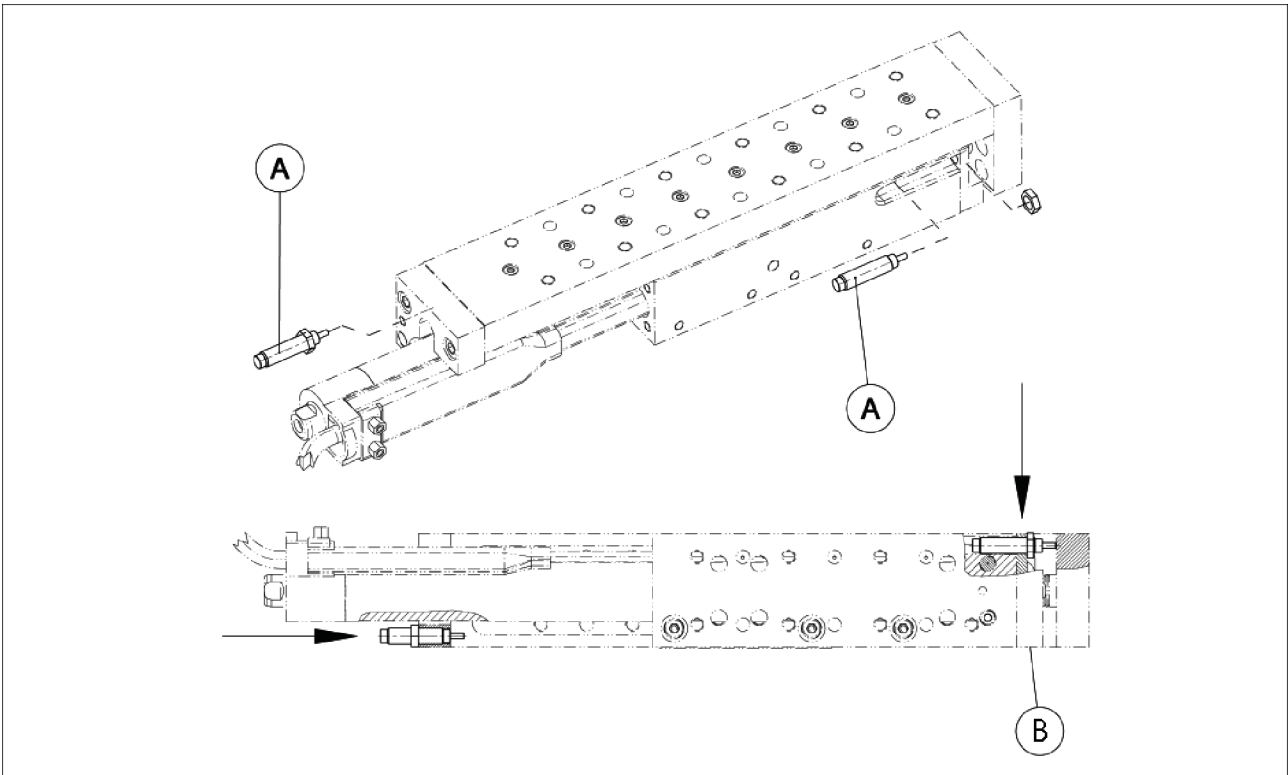


Mounting weight compensation GA 37

	Designation	GA 37
4	Air connection	M5

- Place the pneumatic cylinder (1) in the opening provided in the base body and clamp it on the cover plate between the disk (2) and the nut (3)
- Secure nut with suitable chemical thread locking agent!
- Screw piston rod of the pneumatic cylinder into the threads provided in the end plate (arrow).
- Secure threads with suitable chemical thread locking agent!

#### 4.4 Mounting of shock absorbers SD



Mounting of shock absorbers SD

	Bezeichnung	ELM 23	ELM 37
A	Shock absorber	SD 23	SD 37

- Screw shock absorbers into the threads provided.
- Secure shock absorbers with nuts.

#### NOTE

The module conducts the reference run only at a certain force. During the reference run the slide must always strike the internal stop (B).

- Set the shock absorber back far enough so that it does not serve as a stop.

## 4.5 Mounting of anti-fall device ASP

### **NOTICE**

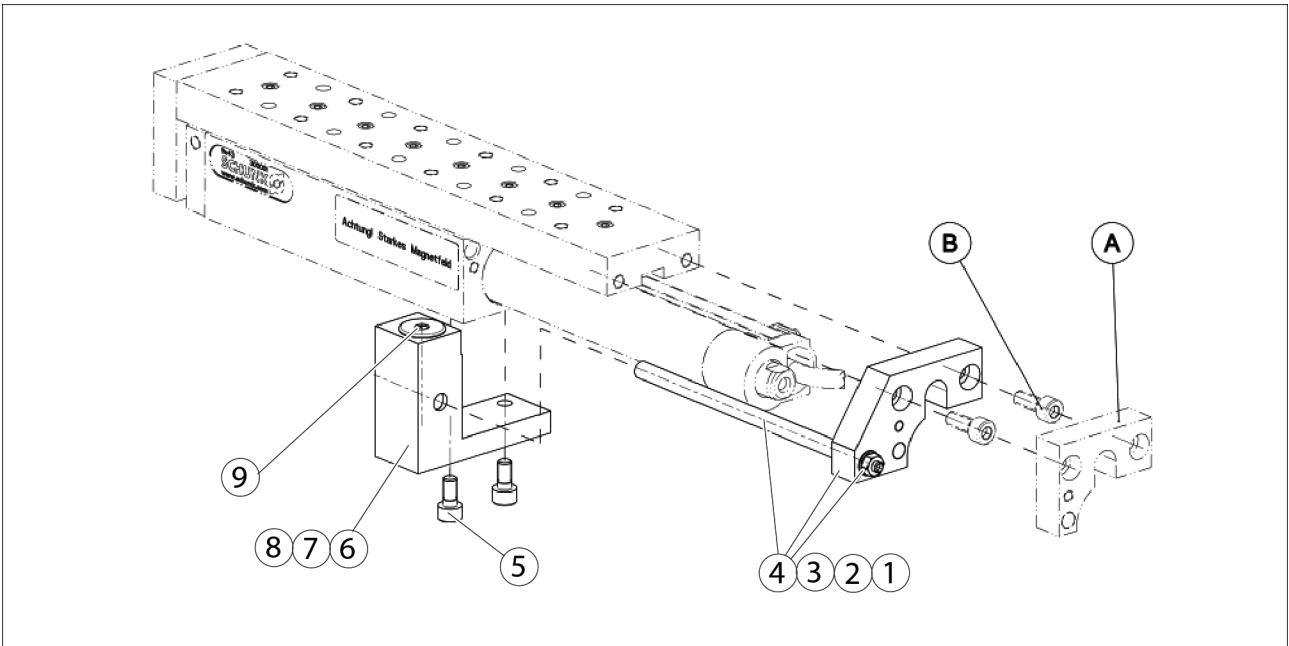
#### **Damage to the rod lock due to incorrect actuation / overload!**

- The rod lock may only be triggered and unlocked when the product has been shut down.
- See the data on static holding force in the catalog. The forces occurring in a clamped condition must not exceed the holding force.
- In the event of a dynamic load or overload (e.g. drop in pressure during movement), the clamping cartridge must be checked and replaced if necessary.



### **⚠ WARNING**

**The rod lock is not a safety component for personal protection in the sense of the Machine Directive.**

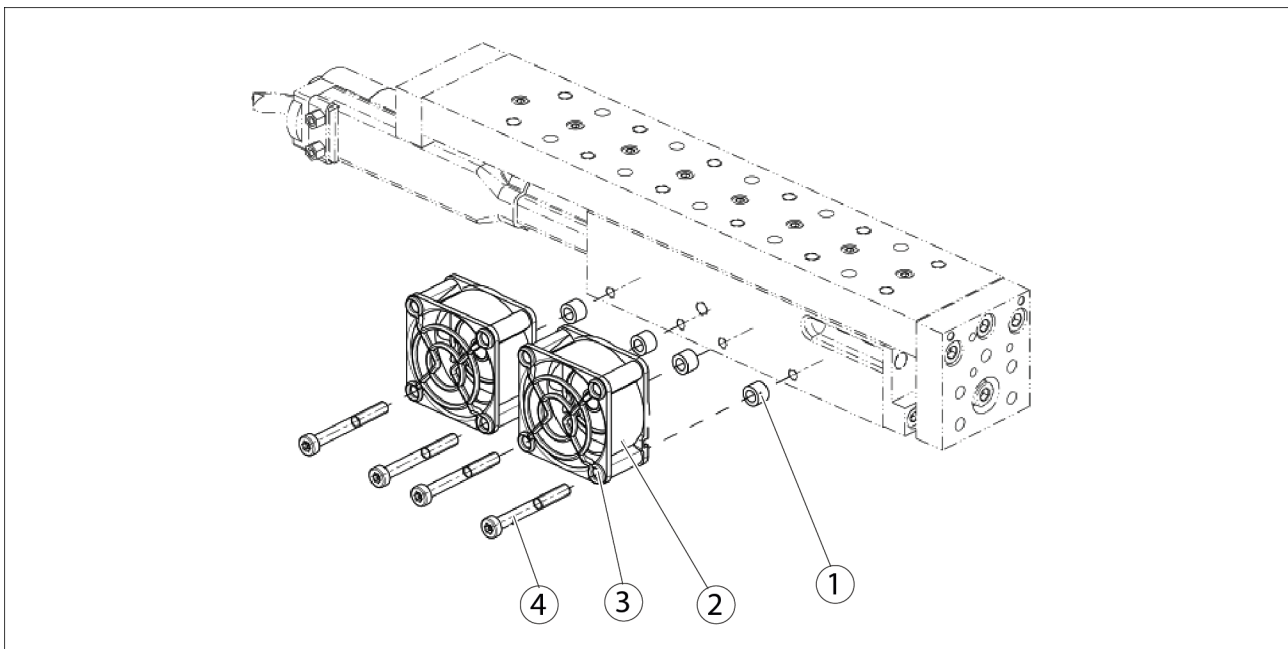


Rod lock assembly

	Description	ASP 23	ASP 37
9	Air connection	M5	M5

- Disassemble the face plate (A) and mounting screws (B) from the ELM module.
- Mount the pre-assembled base body unit consisting of base body (8), rod lock (7) and sliding bushing (6) on the body of ELM using the cylindrical screws (5) provided.
- Mount the pre-assembled unit consisting of the face plate (4), bar (3), washer (2) and nut (1) on the slide of ELM with the mounting screws (B).
- Secure all cylindrical screws with a suitable chemical threadlocker!

### 4.6 Mounting of fan cooling MK

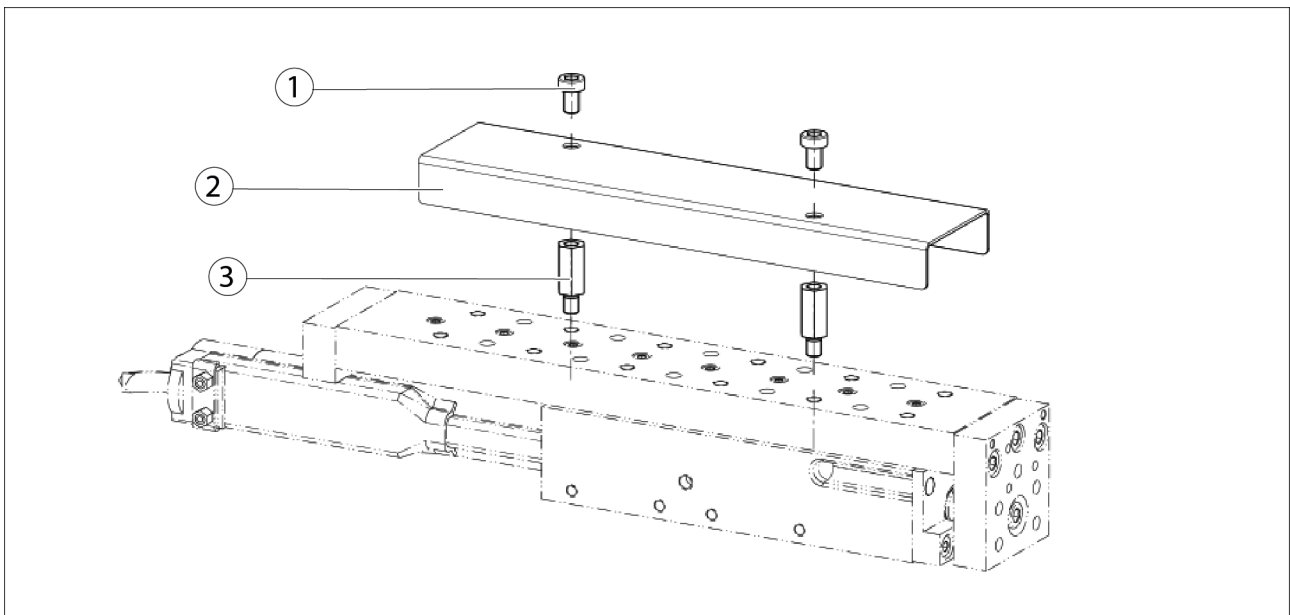


Mounting of fan cooling

	Designation	MK 23	MK 37
1	Spacer 5mm	4	6
2	Compact fan	2	3
3	Protective grid	2	3
4	Mounting screw ISO 4762 M4x35	4	6

- Bolt compact fan (2) and protective grid (3) to the module using mounting screws (4).
- Use spacer (1) to keep distance between the fan and the module
- Secure threads with suitable chemical thread locking agent!

## 4.7 Mounting of cover MA



*Mounting of cover*

- Mount cover (2) on the slide using mounting screws (1) and spacers (3).
- Secure threads with suitable chemical thread locking agent.

## 5 Troubleshooting

### 5.1 Modul bewegt sich nicht?

Possible cause	Corrective action
Cable connected incorrectly.	<ul style="list-style-type: none"> <li>Check whether all electrical connections are properly established</li> </ul>
Wrong cable, controller or power supply unit was used	<ul style="list-style-type: none"> <li>Check whether original SCHUNK components or components recommended by SCHUNK with the correct specification were used <a href="#">Accessories</a> [▶ 6].</li> <li>Consult your SCHUNK contact person.</li> </ul>

### 5.2 The module does not travel through the entire stroke?

Possible cause	Corrective action
Accumulation of dirt between the rotor and the stator	<ul style="list-style-type: none"> <li>Clean and grease the rotor.</li> <li>dismantle and clean module, if necessary <a href="#">Lubricants / lubrication points (basic lubrication)</a> [▶ 32] and <a href="#">Removing and cleaning rotor</a> [▶ 33]</li> </ul>
Mounting surface is not sufficiently flat.	<ul style="list-style-type: none"> <li>Check the evenness of the mounting surface. <a href="#">Mechanical connection</a> [▶ 18]</li> </ul>
Components have come loose e.g. due to overloading.	<ul style="list-style-type: none"> <li>Send product with a SCHUNK repair order or dismantle product. and inspect <a href="#">Dismantling the module</a> [▶ 34].</li> </ul>

### 5.3 Electric signals are not transmitted?

Possible cause	Corrective action
Cable connected incorrectly.	<ul style="list-style-type: none"> <li>Check whether all electrical connections are properly established</li> </ul>
Falsches Kabel, Controller oder Netzteil verwendet	<ul style="list-style-type: none"> <li>Check whether original SCHUNK components or components recommended by SCHUNK with the correct specification were used <a href="#">Accessories</a> [▶ 6].</li> <li>Consult your SCHUNK contact person</li> </ul>

### 5.4 Motor temperature too high?

Possible cause	Corrective action
The module is not designed for the requirements	<ul style="list-style-type: none"> <li>Check design.</li> <li>Consult your SCHUNK contact person.</li> </ul>

### 5.5 Required speed is not reached?

Possible cause	Corrective action
The module is not designed for the requirements	<ul style="list-style-type: none"> <li>• Check design.</li> <li>• Consult your SCHUNK contact person.</li> </ul>

### 5.6 Required precision is not reached

Mögliche Ursache	Maßnahmen zur Behebung
The module is not designed for the requirements.	<ul style="list-style-type: none"> <li>• Check design.</li> <li>• Check technical specifications <a href="#">Technical data</a> [▶ 16].</li> <li>• Use the accessory position measuring system <a href="#">Accessories</a> [▶ 6].</li> <li>• consult your SCHUNK contact person</li> </ul>

## 6 Maintenance and care

### NOTICE

The following recommendations apply to intended operation in accordance with the prescribed operating parameters, operating conditions and settings.



### ⚠ WARNING

#### Risk of injury due to unexpected movements!

If the power supply is switched on or residual energy remains in the system, components can move unexpectedly and cause serious injuries.

- Before starting any work on the product: Switch off the power supply and secure against restarting.
- Make sure, that no residual energy remains in the system.

### 6.1 Maintenance and lubrication intervals

### NOTICE

**At ambient temperatures above 60°C lubricants harden more quickly!**

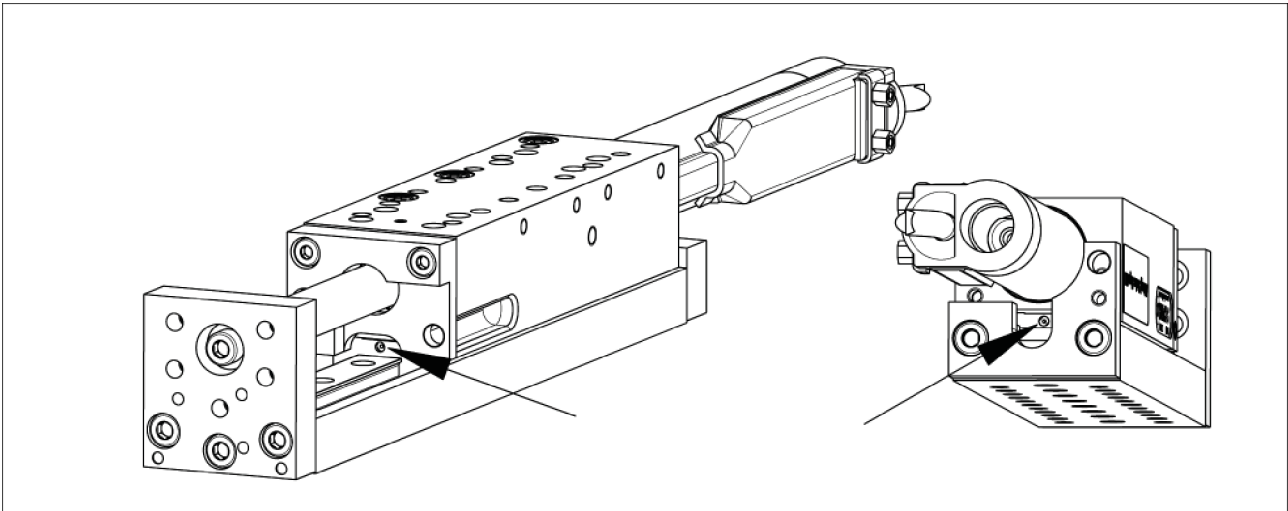
- Reduce interval accordingly.

Interval	Component	Action
1000 operating hours	Rotor / stator	Clean rotor and stator and re-grease. <a href="#">Removing and cleaning rotor</a> [▶ 33].
1000 operating hours	Guide rails / guide carriage	Lubricate at the provided lubrication points <a href="#">Lubricants / lubrication points (basic lubrication)</a> [▶ 32].

## 6.2 Lubricants / lubrication points (basic lubrication)

We recommend the lubricants listed here. Equivalent lubricants can also be used.

Lubricant point	Lubricant
Rotor	<ul style="list-style-type: none"> <li>• LU02 from Linmot or</li> <li>• UH1 14-31 from Klüber</li> </ul>
Guide carriage	<ul style="list-style-type: none"> <li>• ISOFLEX TOPAS NCA 52 from Klüber</li> </ul>
Guide rails	<ul style="list-style-type: none"> <li>• Grease gun filled: SPRI-KWEM from INA</li> </ul>



*Lubrication points for guide carriage*

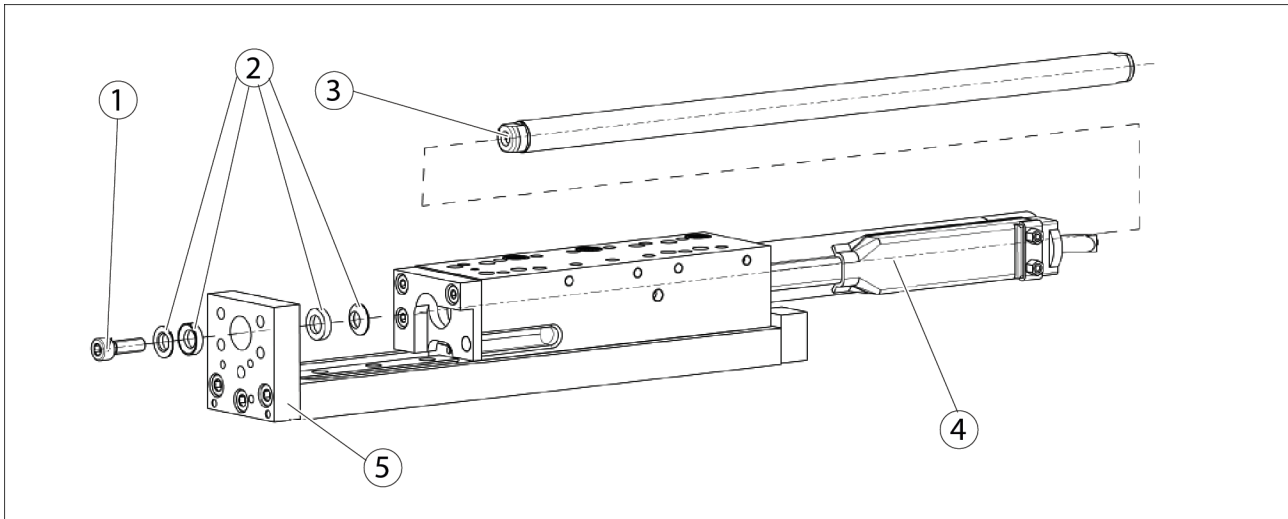
### 6.3 Removing and cleaning rotor



#### ⚠ WARNING

**Danger of injury due to unexpected movements of the machine/system!**

- Switch off energy supply.



Removing rotor

- Loosen mounting screw (1) and remove 2 spherical washer/conical seat units (2)
- Carefully pull rotor (3) back out of the stator (4).
- Clean rotor (3) and inner surface of stator (4) with a soft cloth and alcohol.
- Lubricate rotor (☞ previous Tab.) and carefully insert it in the stator.
- Fasten rotor with mounting screw (1) and 2 spherical washer/conical seat units (2)
- Check rotor (3) for smooth running; if necessary, loosen screw (1), push base body up to stop on end plate (5) and tighten again.

#### NOTE

Do not use hard brushes or organic solvents and cleaners other than alcohol! Secure threads with suitable chemical thread locking agent!

## 6.4 Dismantling the module



### **⚠ WARNING**

**Danger of injury due to unexpected movements of the machine/system!**

- Switch off energy supply.
- 

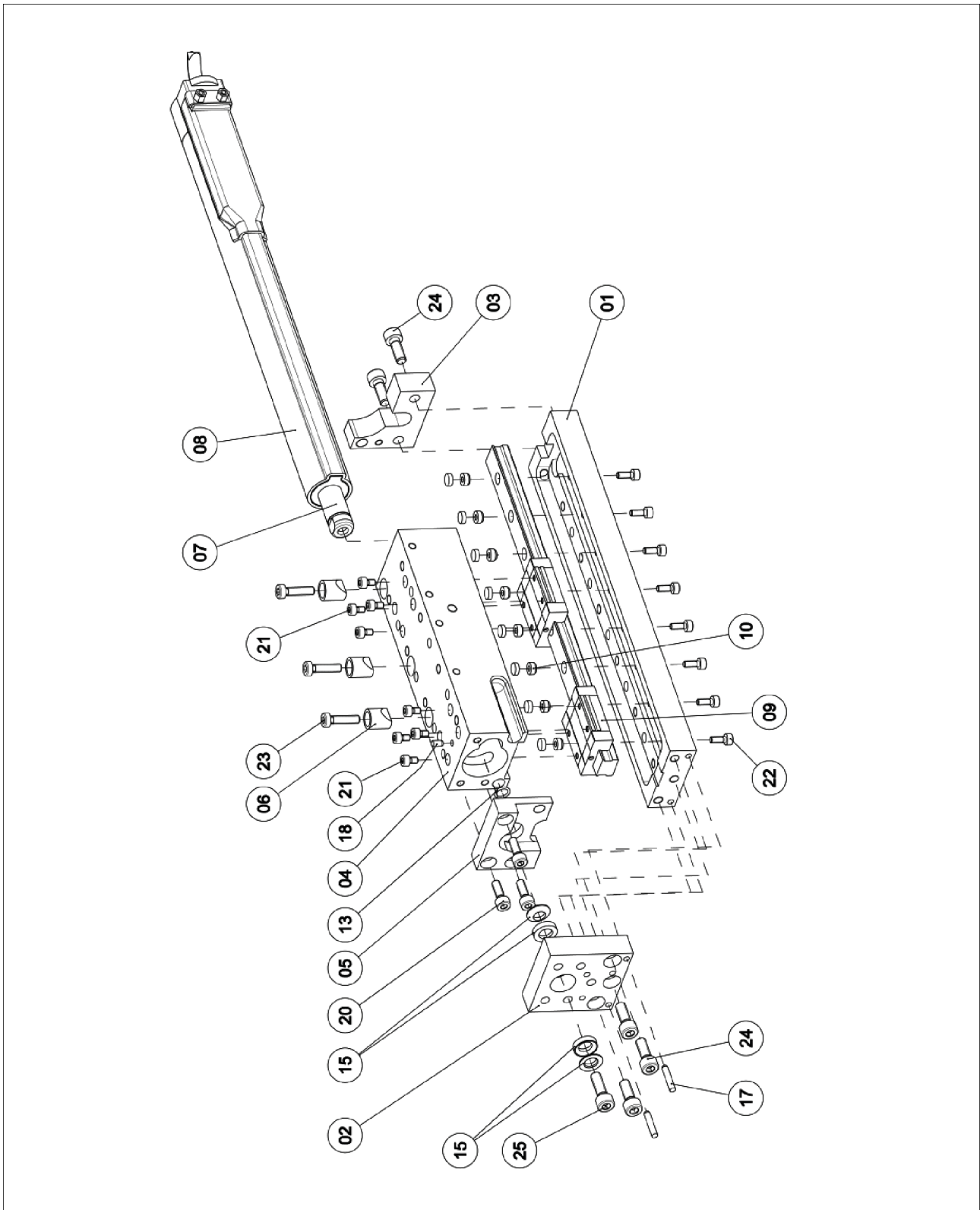
### **NOTICE**

- Sound technical knowledge is required for disassembly / assembly of the module.
  - In case of damage and malfunctions, we recommend sending the module to the factory for repair.
  - In case of unauthorized disassembly/assembly of the module, the SCHUNK warranty and guarantee will be voided.
- 

- Disassembly and assembly in accordance with the assembly drawing
- Always comply with the generally applicable screw tightening torques!
- Secure threads with suitable chemical thread locking agent !

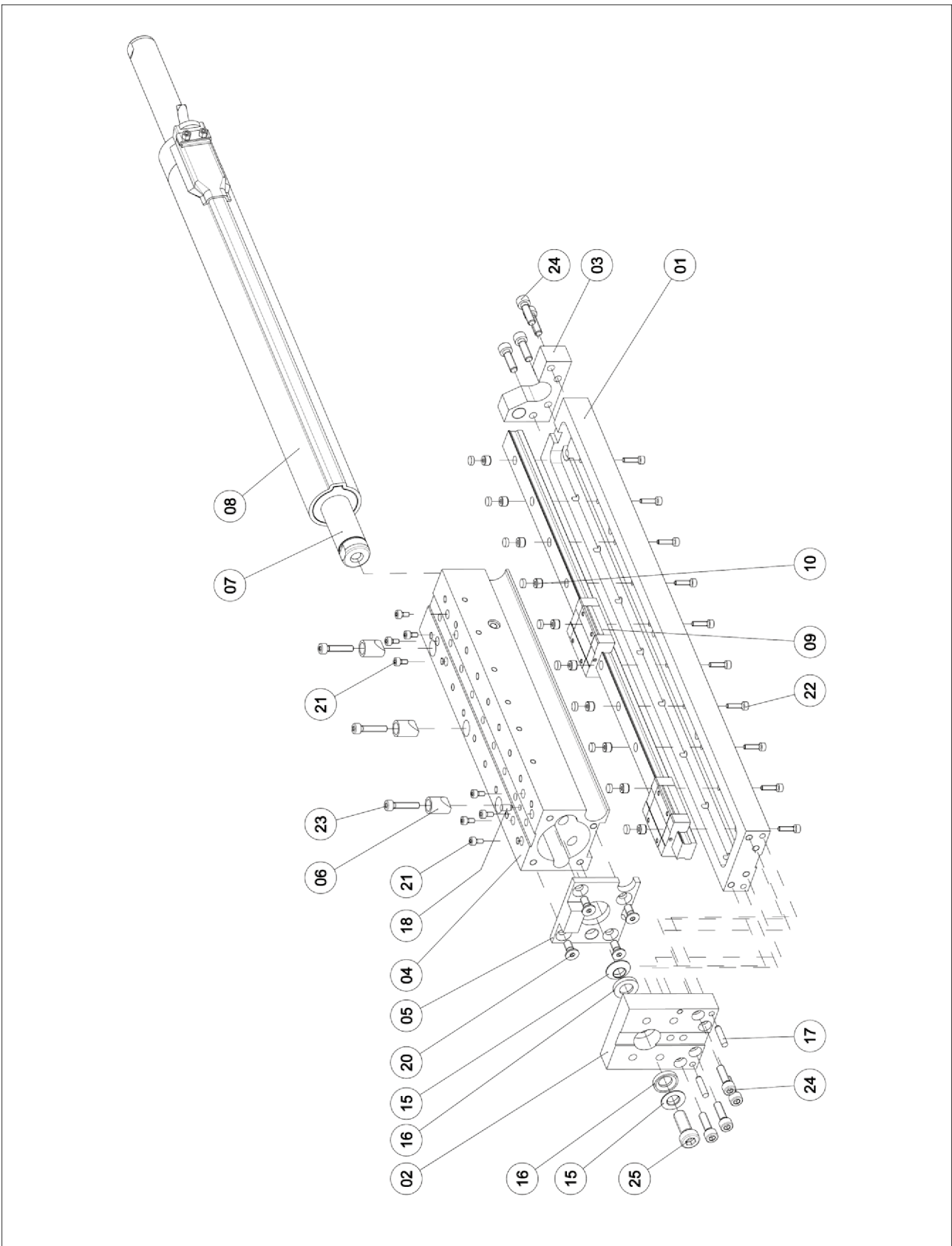
## 6.5 Assembly drawings

### 6.5.1 Assembly of ELM 23



Assembly of ELM 23

### 6.5.2 Assembly of ELM 37



Assembly of ELM 37



## 7.1 Annex to Declaration of Incorporation

according 2006/42/EG, Annex II, No. 1 B

1. Description of the essential health and safety requirements pursuant to 2006/42/EC, Annex I that are applicable and that have been fulfilled with:

Product designation	Linear axis
Type designation	ELM
ID number	0314365, 0314366, 0314367, 0314368, 0314369, 0314370, 0314371, 0314372, 0314373, 0314374, 0314380, 0314381

To be provided by the System Integrator for the overall machine	↓
Fulfilled for the scope of the partly completed machine	↓
Not relevant	↓

1.1	Essential Requirements			
1.1.1	Definitions		X	
1.1.2	Principles of safety integration		X	
1.1.3	Materials and products		X	
1.1.4	Lighting		X	
1.1.5	Design of machinery to facilitate its handling		X	
1.1.6	Ergonomics		X	
1.1.7	Operating positions			X
1.1.8	Seating			X

1.2	Control Systems			
1.2.1	Safety and reliability of control systems		X	
1.2.2	Control devices		X	
1.2.3	Starting		X	
1.2.4	Stopping		X	
1.2.4.1	Normal stop		X	
1.2.4.2	Operational stop		X	
1.2.4.3	Emergency stop		X	
1.2.4.4	Assembly of machinery		X	
1.2.5	Selection of control or operating modes		X	
1.2.6	Failure of the power supply			X

1.3	Protection against mechanical hazards			
1.3.1	Risk of loss of stability			X
1.3.2	Risk of break-up during operation			X
1.3.3	Risks due to falling or ejected objects			X
1.3.4	Risks due to surfaces, edges or angles		X	
1.3.5	Risks related to combined machinery			X

<b>1.3</b>	<b>Protection against mechanical hazards</b>			
1.3.6	Risks related to variations in operating conditions			X
1.3.7	Risks related to moving parts		X	
1.3.8	Choice of protection against risks arising from moving parts			X
1.3.8.1	Moving transmission parts		X	
1.3.8.2	Moving parts involved in the process			X
1.3.9	Risks of uncontrolled movements			X
<b>1.4</b>	<b>Required characteristics of guards and protective devices</b>			
1.4.1	General requirements			X
1.4.2	Special requirements for guards			X
1.4.2.1	Fixed guards			X
1.4.2.2	Interlocking movable guards			X
1.4.2.3	Adjustable guards restricting access			X
1.4.3	Special requirements for protective devices			X
<b>1.5</b>	<b>Risks due to other hazards</b>			
1.5.1	Electricity supply		X	
1.5.2	Static electricity		X	
1.5.3	Energy supply other than electricity		X	
1.5.4	Errors of fitting		X	
1.5.5	Extreme temperatures			X
1.5.6	Fire			X
1.5.7	Explosion			X
1.5.8	Noise			X
1.5.9	Vibrations			X
1.5.10	Radiation	X		
1.5.11	External radiation	X		
1.5.12	Laser radiation	X		
1.5.13	Emissions of hazardous materials and substances			X
1.5.14	Risk of being trapped in a machine	X		
1.5.15	Risk of slipping, tripping or falling	X		
1.5.16	Lightning			X
<b>1.6</b>	<b>Maintenance</b>			
1.6.1	Machinery maintenance		X	
1.6.2	Access to operating positions and servicing points		X	
1.6.3	Isolation of energy sources		X	
1.6.4	Operator intervention		X	
1.6.5	Cleaning of internal parts		X	

Translation of original declaration of incorporation

<b>1.7</b>	<b>Information</b>			
1.7.1	Information and warnings on the machinery		X	
1.7.1.1	Information and information devices		X	
1.7.1.2	Warning devices		X	
1.7.2	Warning of residual risks		X	
1.7.3	Marking of machinery	X		
1.7.4	Instructions	X		
1.7.4.1	General principles for the drafting of instructions	X		
1.7.4.2	Contents of the instructions	X		
1.7.4.3	Sales literature	X		
	<b>The classification from Annex 1 is to be supplemented from here forward.</b>			
2	Supplementary essential health and safety requirements for certain categories of machinery			X
2.1	Foodstuffs machinery and machinery for cosmetics or pharmaceutical products			X
2.2	Portable hand-held and/or guided machinery			X
2.2.1	Portable fixing and other impact machinery			X
2.3	Machinery for working wood and material with similar physical characteristics			X
3	Supplementary essential health and safety requirements to offset hazards due to the mobility of machinery		X	
4	Supplementary essential health and safety requirements to offset hazards due to lifting operations		X	
5	Supplementary essential health and safety requirements for machinery intended for underground work			X
6	Supplementary essential health and safety requirements for machinery presenting particular hazards due to the lifting of persons		X	